

I claim:

1 1. A handheld searchlight having a lamp for efficiently producing a
2 high intensity beam of light comprising:
3 a printed circuit board having circuitry to regulate and control power
4 supplied to the lamp;
5 a housing to contain the printed circuit board; and
6 a heat sink coupled to the printed circuit board, the heat sink also
7 coupled to the housing to dissipate heat generated by the printed circuit
8 board.

1 2. The handheld searchlight of claim 1, wherein the heat sink is
2 formed from extruded aluminum material.

1 3. The handheld searchlight of claim 1, wherein the housing is
2 made from extruded aluminum material for optimum heat transfer
3 characteristics.

1 4. The handheld searchlight of claim 1, further comprising a battery
2 contained within the housing and electrically connected to the printed circuit
3 board, wherein the battery supplies power to the handheld searchlight.

1 5. The handheld searchlight of claim 4 wherein the battery has a
2 first end and a second end and one or more elongated sides, and wherein the

3 battery has electrical contacts located alternatively on one of the first end or
4 the second end or one of the elongated sides.

1 6. The handheld searchlight of claim 5 wherein the electrical
2 contacts are sliding contacts.

1 7. The handheld searchlight of claim 1 wherein the housing has a
2 knurled surface to facilitate handling of the handheld searchlight by a user.

1 8. A lamp assembly system for a handheld illumination system
2 comprising:
3 a removable lamp having an electrical contact with a pin lead; and
4 a lamp socket hole for receiving the electrical contact with a pin lead,
5 the lamp socket hole including:
6 a spring assembly for securing the electrical contact with a pin
7 lead while allowing lateral and circular movement of the lamp in an X-Y
8 plane to provide proper alignment of the lamp, wherein the spring
9 assembly further provides an electrical connection between the lamp
10 and the lamp socket hole.

1 9. The lamp assembly of claim 8, further comprising a lamp
2 extraction tool to grip the lamp, the lamp having a glass envelope, for removal
3 of the lamp without contaminating the glass envelope.

1 10. The lamp assembly of claim 8 wherein the lamp has a glass
2 envelope, the lamp assembly further comprising a lamp protector encasing
3 the lamp to prevent contamination of the glass envelope.

1 11. A lamp for an illumination system comprising:
2 a glass envelope;
3 a base portion; and
4 an anode pin lead and a cathode pin lead extending from the base
5 portion at an end thereof, so that the anode pin lead and the cathode pin lead
6 are physically adjacent to one another thus providing a single ended lamp
7 configuration.

1 12. The lamp for an illumination system of claim 11 wherein the
2 lamp is an arc lamp having a plasma region.

1 13. The lamp for an illumination system of claim 11 further
2 comprising a cylindrical neck portion connecting said glass envelope and said
3 base portion.

1 14. A handheld searchlight for efficiently producing a high intensity
2 beam of light comprising:
3 a body section housing internal components of the handheld
4 searchlight;
5 a head section encasing a reflector and a lamp;

6 a magnetic switch on the body section having a magnet wherein
7 the position of the magnet controls ON/OFF power to the lamp.

1 15. The handheld searchlight of claim 12, wherein the magnetic
2 switch is made from ferromagnetic material.

1 16. A handheld searchlight for efficiently producing a high intensity
2 beam of light comprising:
3 a body section housing internal components of the handheld
4 searchlight;
5 a head section encasing a reflector and a lamp; and
6 a threaded end cap coupled to the body section at an end thereof, the
7 threaded end cap having circular electrical contacts, wherein the circular
8 electrical contacts are configured to couple an external power source to
9 circuitry within the battery.

1 17. The handheld searchlight of claim 14, further comprising an
2 internal battery contained within the body section, and wherein the internal
3 battery supplies power to the handheld searchlight and wherein the external
4 power source comprises a DC power source or an AC to DC converter.

1 18. The handheld searchlight of claim 15 wherein the DC power
2 source is a vehicular battery having a voltage approximately in the range of
3 11.5 to 36 volts DC.

19. 17. The handheld searchlight of claim 12, further comprising means
2 for inductive coupling to transfer external power to the handheld searchlight
3 without electrical penetrations to the body section of the handheld searchlight.

20. 18. A handheld searchlight for efficiently producing a high intensity
2 beam of light comprising:
3 a body section housing internal components of the handheld
4 searchlight;
5 a head section encasing a reflector and a lamp, the reflector disposed
6 about the lamp to reflect light generated by the lamp;
7 a lens coupled to the reflector at an end thereof;
8 a threaded bezel to secure the lens and the reflector; and
9 a threaded optical lens filter connected to the threaded bezel to filter
10 selected wavelengths of light emitted from the lamp and to protect the lens
11 from physical damage.

21. 19. The handheld searchlight of claim 18 wherein the optical lens
2 filter blocks all undesired wavelengths of light and passes desired
3 wavelengths of light.

22. 20. The handheld searchlight of claim 18 wherein the optical lens
2 filter blocks all wavelengths of light less than approximately 850 nm.

23. 21. A handheld searchlight comprising:

2 a body section housing internal components of the handheld
3 searchlight;
4 a head section encasing a reflector and a lamp; and
5 a shoulder strap secured to the body section for supporting the
6 handheld searchlight.

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1 22. The handheld searchlight of claim 21 further comprising an end
2 cap connected to an opposing end of the body section with respect to the
3 head section.

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1 23. The handheld searchlight of claim 21 wherein the end cap has
2 circular contacts to electrically connect an external power source to the
3 handheld searchlight.

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1 24. A method of supplying power to a handheld searchlight
2 comprising inducing a voltage from an external power source using inductive
3 coupling.

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1 25. The method of claim 24, further comprising providing an external
2 DC power source and an external DC to AC converter, wherein the external
3 DC to AC converter converts DC to high frequency AC for inductive coupling.

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1 26. The method of claim 24 wherein the external DC power source
2 is a vehicular battery having a voltage source approximately in the range of
3 11.5 to 36 volts DC.

1 29 27. The method of claim 24, further comprising providing a battery
2 internal to the handheld searchlight, wherein the searchlight has a lamp and
3 wherein the lamp may be alternatively powered by the battery or the external
4 power source.

1 30 28. The method of claim 24, wherein the inducing a voltage from an
2 external power source comprises electrically connecting the external power
3 source to an end cap, the end cap having circular contacts.

1 31 29. A handheld searchlight for efficiently producing a high intensity
2 beam of light comprising:
3 a body section housing internal components of the handheld
4 searchlight;
5 a lamp having a cylindrical neck portion; and
6 a reflector disposed around the lamp to reflect light generated by the
7 lamp, the reflector having a collar surrounding said neck portion of the lamp
8 with a close interface between said collar and said neck portion so that said
9 collar is able to move axially with respect to said neck portion and so that the
10 neck portion is able to transfer heat generated by the lamp to the collar.

1 32 30. The handheld searchlight of claim 29, further comprising a head
2 section encasing the reflector and the lamp, the head section in thermal
3 contact with the reflector to facilitate heat dissipation generated by the lamp.

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1 34. The handheld searchlight of claim 29 wherein the searchlight
2 has a beam-spread, and wherein the axial position of said collar with respect
3 to said neck portion varies the beam-spread of the searchlight.

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1 32. The handheld searchlight of claim 29 wherein said close
2 interface between said collar and said neck portion maintains the lamp
3 aligned on the optical axis of the reflector when said collar moves axially with
4 respect to said neck portion.

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1 33. A handheld searchlight for efficiently producing a high intensity
2 beam of light comprising:
3 a housing to contain internal components to the searchlight;
4 a battery contained within the housing; and
5 an internal battery charger contained within the housing that is able to
6 charge said battery from an AC or a DC source.

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1 34. The handheld searchlight of claim 33 wherein the battery has a
2 first end and a second end and one or more elongated sides, and wherein the
3 battery has electrical contacts located alternatively on one of the first end or
4 the second end or one of the elongated sides.

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1 35. The handheld searchlight of claim 34 wherein the electrical
2 contacts are sliding contacts.

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- 1 36. The handheld searchlight of claim 33 wherein the DC source is
- 2 an external DC vehicular battery having a voltage source approximately in the
- 3 range of 11.5 to 36 volts.